

NASA TECH BRIEF



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Improved S/N Meter

Signal-to-noise ratios (S/N) can be read directly on a meter which incorporates a variable-frequency notch filter. This meter permits the measurement of noise plus interference in the presence of carrier or modulation signals. Conventional methods of measuring S/N generally distort the noise spectrum or remove intermodulation products which contribute to the effective noise plus interference.

The new S/N meter employs notch filter techniques to phase lock a loop to the desired signal component of the input spectrum and then shift the VCO output an additional 90 degrees to provide a signal component 180 degrees out of phase with the incoming signal component. If the amplitudes of the signals are made equal, the sum of the input spectrum and the reconstructed signal component is the input spectrum with the signal (or carrier) component notched out. The relationship between the signal amplitude and the residual noise is the signal-to-noise ratio.

The meter operates between a baseband signal of 400 Hz to 1.5 MHz or an i-f signal of 8 MHz to 55 MHz at the input of an attenuator, which is used to adjust the input signal (or carrier) component to a

signal level of -50 dbm. The meter can be made to operate in either an i-f or a baseband mode by selection of the proper pushbutton on the front panel. A noise source and calibration signal source (1 MHz for baseband and 10 MHz for i-f) are included in the instrument for calibration purposes. Nulls in excess of 40 db of the signal component can be obtained.

Note:

Inquiries concerning this meter may be directed to:
Technology Utilization Officer
Manned Spacecraft Center
Houston, Texas 77058
Reference: B68-10151

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

Source: C. B. Windett
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Category 01